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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,899	04/12/2001	Jean-Marc Balloul	032751-052	1686

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EXAMINER	
BOESEN, AGNIESZKA	
ART UNIT	PAPER NUMBER
1648	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/832,899	BALLOUL ET AL.	
	Examiner	Art Unit	
	Agnieszka Boesen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-26* is/are pending in the application.

4a) Of the above claim(s) *7,16,17 and 19-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,10-15,18 and 24-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/7/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's Amendment filed February 7, 2007 in response to the Office Action on November 8, 2006 is acknowledged and has been entered. Claims 1-3, 5, 6, 10-15, 18, 24, and 25 are pending and under examination.

In view of the newly found prior art, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of claims 1-3, 5, 6, 10-15, 18, 24, 25 and new claim 26 under 35 U.S.C. 112, first paragraph, as failing to comply with enablement requirement **is maintained.**

Applicant argues that the present specification provides a detailed explanation such as Examples and Figures showing how the poxviral particle of the current invention is constructed and that the poxviral particle has the claimed targeted infection specificity. Applicant argues that the specification indicates that the "targeted infection specificity" recited in the present claims refers to an enhanced tropism toward the target cells as compared to the infection specificity of wild type poxvirus particles. Examiner agrees that the current specification is enabling for the MVA poxviral vector which comprises a ligand moiety which is the scFv chain of the SM3 monoclonal antibody fused to the viral p14 N terminus and that this poxviral particle has targeted infection specificity. However the current claim1 is drawn to a poxviral particle having targeted

infection specificity, wherein the poxviral particle infects target cells by the binding of at least one ligand moiety, which is any polypeptide, to an anti-ligand molecule localized at the surface of the target cell. Because the current claims read broadly on any polypeptide as being a ligand moiety determining the ability of the poxviral particle to bind to the target cells, and the current specification does not provide enablement for all possible peptide ligand moieties, the specification does not enable one skilled in the art to practice the current invention in its broad scope as claimed.

Applicant cites a number of references and argues that preparing virus particles having targeted infection specificity is well established in the art and that the key element for targeting is the exposure of the ligand moiety at the viral surface and its availability for interacting with the anti-ligand molecule located on the target cell. It is acknowledged that the ordinary artisan has successfully practiced preparing virus particles having targeted infection specificity. However considering the nature of the current invention such as targeting specifically the tumoral cells, and not just the normal cells as disclosed in the cited references, the enablement of the currently claimed invention has not been fully satisfied as discussed below.

Examiner understands that for the poxviral particle of the current invention to have the claimed targeted infection specificity the chimeric poxviral particle needs to come in contact with the tumoral target cell that overexpresses the cellular protein, through which the chimeric poxviral particle is going to bind and infect the target cell. The current claim 5 recites "said tumor-specific antigen comprises a (...) overexpressed cellular protein". However claim 1 does not recite the required property of the tumor antigen such as "overexpressed cellular protein". Claim 1 broadly recites " target cells". As Applicant argued the normal cells will not become

significantly infected by the particle having targeted infection specificity. The limitations required to practice the claimed invention are not present in the current claim 1. Thus for the reasons discussed above the specification does not enable one skilled in the art to practice the current invention as claimed.

Applicant amended claim 5 to recite "differentially expressed". Because the term "differentially expressed" has an ambiguous meaning such as underexpressed and overexpressed, and because the cellular protein antigen needs to be overexpressed and not underexpressed in order to successfully practice the current invention as discussed above, amending the claims to recite "differentially expressed" does not help to overcome the enablement rejection.

For the reasons discussed above the current rejection is maintained.

(New Rejection) **Claims 1-3, 5, 6, 10-15, 18, 24, 25 and new claim 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a poxviral particle having targeted infection specificity, wherein the poxviral particle infects target cells by the binding of at least one ligand moiety, which is any polypeptide, to an anti-ligand molecule localized at the surface of the target cell. The current claims are rejected because the claims broadly read on any polypeptide as being a ligand moiety and the specification does not provide an adequate written description of all possible polypeptide ligand moieties. The claims recite a function, such as binding of the poxviral particle to an anti-

ligand molecule without reciting a specific core structure of the ligand molecule that is required for the claimed function.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. One of skill in the art would not know what are the structures of the claimed polypeptides that need to be expressed on the surface of the poxviral particles in order for the particle to have the capability to bind to the target cell. The claimed compounds have not been sufficiently described in terms of their structure and function. Applicant's claims pertain to a function of a polypeptide that has an unknown structure. Claiming a product based on function (binding of the poxviral particle to an anti-ligand molecule) does not provide sufficient description of the product as claimed. Therefore, the large amount of various polypeptides encompassed by the claimed invention would be expected to have greater differences in their structural and functional characteristics and attributes. Mere idea or function is insufficient for written description.

The mere contemplation of the claimed genus in the specification is not sufficient to support the presently claimed invention directed to a genus of polypeptides that are expected to confer the binding of the chimeric poxviral particle to the target cell. The claimed invention as a whole is not adequately described if the claims require essential or critical elements, which are not adequately described in the specification and which are not conventional in the art as of applicant's effective filing date. Claiming a genus of compounds that must possess the biological

properties as contemplated by applicants' disclosure without defining what means will do so is not in compliance with the written description requirement. Rather, it is an attempt to preempt the future before it has arrived. (See *Fiers v. Revel*, 25 USPQ2d 1601 (CA FC 1993) and. *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1405 (Fed. Cir. 1997). Possession may be shown by actual reduction to practice (provided in the specification and/or the 37 U.S.C. 1.132 declaration), clear description of the invention in a detailed drawing, or by describing the invention with sufficient relevant identifying characteristics such that a person skilled in the art would recognize that the inventor had possession of the claimed invention. *Pfaff v. Wells Electronics. Inc.*, 48 USPQ2d 1641, 1646 (1998). The skilled artisan cannot envision the detailed structure of a genus of compounds that are contemplated in the invention. Conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the structures disclosed in the as-filed specification. Thus, in view of the reasons set forth above, one skilled in the art at the time the invention was made would not have recognized that applicant was in possession of the claimed invention as presently claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(New Rejection) Claims 1-3, 5, 6, 10, 11 18, 24, 25 and new claim 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Balloul et al (Cellular and Molecular

Biology, 1994, Vol. 40, p.49-59) as evidenced by Vazquez et al. (Journal of Virology, 1998, Vol. 72, p. 10126-10137).

The claims are drawn to a poxviral particle having targeted infection specificity, wherein the poxviral particle infects target cells by binding of at least one ligand moiety to an anti-ligand molecule localized at the surface of the target cell. The ligand moiety is fused to a poxviral polypeptide localized at the surface of IMV. Poxviral particle polypeptide is an expression product of the A27L gene. The ligand moiety binds tumor specific antigen, such as for example IL-2, or a MUC-1 antigen. The poxviral particle is a Copenhagen strain.

Balloul et al. disclose a chimeric poxviral particle of the Copenhagen strain recombinantly made to express polypeptides encoding IL-2 and a polypeptide that binds to the MUC 1 antigen on a tumoral target cell (see the entire document, particularly Materials and Methods). Balloul et al. does not expressly disclose that the ligand moiety polypeptide is fused to a poxviral polypeptide localized at the surface of IMV or that poxviral particle polypeptide is an expression product of the A27L gene. However the poxviral particle disclosed by Balloul et al. is an intracellular mature virus (IMV), because as evidenced by Vazquez et al. only the IMV and not the extracellular enveloped virus (EEV) enters the cell through fusion such as by binding to the cellular receptor like IL-2 or MUC 1 antigen as currently claimed. The IMV poxviral particle inherently encoded the A27L gene as evidenced by Vazquez et al. and both the currently claimed chimeric poxviral particle and the Balloul's poxviral particle were prepared using the same recombinant technology. Thus one would expect that the currently particles claimed and the references poxviral particles are the same.

Thus Balloul et al anticipates the current claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agnieszka Boesen whose telephone number is 571-272-8035. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB
Agnieszka Boesen, Ph.D.
2|23|2007

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